8:00 AM - 9:00 AM
Registration

9:00 AM - 9:30 AM
Welcome, Agenda, and Logistics - Patrick Coronado (NASA)/Jose Luis Casanova (LATUV)

9:30 AM - 10:00 AM
Universidad de Valladolid Welcome and Presentation - Rector of the Universidad de Valladolid

10:00 AM - 10:30 AM
LATUV Presentation - Jose Luis Casanova (LATUV)

10:30 AM - 10:45 AM
Break

10:45 AM - 11:15 AM
The Earth Observation Activities at INTA - Eduardo de Miguel LLanes (INTA)

11:15 AM - 11:45 AM
EOS and SNPP/JPSS-1 Mission and Instrument Update - Patrick Coronado (NASA)

11:45 AM - 12:45 PM
Lunch

12:45 PM - 1:15 PM
NASA Science Roadmap - Tsengdar Lee (NASA)

1:15 PM - 1:45 PM
NASA Direct Readout Laboratory - Patrick Coronado (NASA)

1:45 PM - 2:15 PM
Global Observations and Role of Near Real-Time/Direct Readout in NASA Applied Sciences - Miguel Roman (NASA)

2:15 PM - 2:30 PM
Break

2:30 PM - 3:00 PM
NASA Global Near Real-time Environment (LANCE) - Karen Michael (NASA)/Diane Davies (NASA)

3:00 PM - 3:30 PM
NASA VIIRS Level-1 - Fred Patt (NASA)

3:30 PM - 4:00 PM
Volcanic Detection/Air Quality Using OMI and OMPS - Seppo Hassinen (FMI)

4:00 PM - 4:30 PM
EUMETSAT Operational Hyperspectral Level-2 Products - from Global to Regional Services - Thomas August (EUMETSAT)

4:30 PM - 5:00 PM
BlueMarble - Vanu Dasgupta (NASA)

The potential of regionally-produced near real-time EOS and SNPP science data products is often not fully realized from the standard research data products. This is due to a lack of available tools that can unlock the unique features that may be derived from these standard products. BlueMarble is an evolving tool that bridges the gap between science data products and end-user applications. It empowers end users by giving them a tool to unlock these unique features thereby enhancing their user experience as well as extending utility of their decision-support systems. Within the design of BlueMarble there is special attention given to ease of use and utility of value-added products. BlueMarble features a combination of core utilities (generation of GIS compatible Geotiffs, user-defined projections and resolutions, subsetting and mosaicing, vector overlays, automated data selection based on swath/Region-of-interest overlap determination), specialized algorithms to deal with sensor-specific characteristics or artifacts (e.g. sharpening of moderate resolution bands, dealing with dropouts and bowtie-related issues, addressing interpolation requirements, addressing data quality issues, etc) and application specific utilities (e.g. overlays of fires or aerosols on background imagery). In this workshop, we will look at some examples of extended application-specific multi-mission/multi-sensor data products that BlueMarble produces. We will also discuss its various capabilities, ease of use as well as its extensibility.

5:30 PM - 7:30 PM
Icebreaker Sponsored by LATUV

Wednesday, June 22, 2016 - Real Time Land Science Applications

9:00 AM - 9:10 AM
Land Discipline Welcome/Overview for the Day - Brad Quayle (USDA Forest Service)

9:10 AM - 10:00 AM
WORKSHOP: Multi-angle Implementation of Atmospheric Correction (MAIAC) - Alexei Lyapustin (NASA)
MAIAC is a new algorithm that uses time series analysis and processing of groups of pixels for advanced cloud detection and retrieval of aerosol and surface bidirectional reflectance properties. Recent studies showed that MAIAC significantly improves the accuracy of atmospheric correction over northern latitudes and tropics, including Amazon region, as compared to the standard MODIS surface reflectance products. This discussion will provide an overview of MAIAC processing and products with several application examples.

10:00 AM - 10:45 AM
WORKSHOP: SMAP - Vanessa Escobar (NASA)
This workshop will discuss mission status, post launch applications, and the use of data product by Early Adopters and the SMAP user community. Now in Phase E of the mission life, SMAP plans to gather lessons learned from its community and get a better understanding of the impact SMAP has in areas of applications. To that effort, Early Adopter case studies are being conducted in weather, agriculture, flood, drought, health and national security to help quantify the value of SMAP data.

10:45 AM - 11:30 AM
Posters/Exhibits

11:30 AM - 12:00 PM
WORKSHOP: Applications of Real-time Satellite Precipitation Estimates - Francisco Tapiador (UCLM)
The Global Precipitation Measurement (GPM) mission constellation provides products which are suitable for the near real-time monitoring of extreme hydrometeorological events. Here, we review the applicability of the GPM estimates of precipitation in the land realm.

12:00 PM - 1:00 PM
Lunch

1:00 PM - 2:15 PM
WORKSHOP: Active Fire - Louis Giglio (NASA ST)/Wilfrid Schroeder (NASA ST)
In this session we will cover the latest MODIS Collection 6 and VIIRS active fire algorithms. We will describe the MODIS Collection 6 algorithm changes that targeted outstanding commission and omission errors, highlighting improved fire detection performance metrics relative to the Collection 5 algorithm. Two VIIRS active fire products will be demonstrated, namely (i) the baseline 750m resolution data set using an adapted MODIS Collection 6 algorithm and (ii) the new 375m product providing higher resolution fire detection data. We also describe select regional/global fire mapping and emissions/air quality applications serving the broader user community.

2:15 PM - 3:00 PM
WORKSHOP: Burned Area Mapping and Monitoring Algorithms - Louis Giglio (NASA ST)/Wilfrid Schroeder (NASA ST)
We will cover the status of the Collection-6 MODIS burned area product, to be generated using the MCD64A1 burned area mapping algorithm, as well as the progress made in adapting the mapping approach to the VIIRS instrument. A potential path for developing a true, NRT burned area mapping algorithm optimized for direct broadcast applications will also be discussed.

3:00 PM - 3:15 PM
Break

3:15 PM - 3:45 PM
Advanced Fire Information System (AFIS) - Philip Frost (CSIR)
AFIS is a web-based and mobile application for mapping, visualization and monitoring of global active fires as well as burnt areas in NRT from satellite and ground based sensors. Fire danger and weather forecast model output integration/fusion facilitate decision support as well as Crowd sourcing through an innovative mobile app linked to an online dashboard.

3:45 PM - 4:30 PM
WORKSHOP: Monitoring Flood Events with NASA's Near Real-time Flood Mapping Products - Dan Slayback (NASA)
NASA Goddard Space Flight Center's Global Flood Mapping project generates near real-time flood and surface water maps from the MODIS and Landsat instruments. These products are freely available, and are also often incorporated into maps customized for the specific event by the Dartmouth Flood Observatory. We will discuss the strengths and limitations of these products, along with the ability to examine the product archive to place current events in context.

4:30 PM - 5:15 PM

WORKSHOP: USDA World Agricultural/Food Security Monitoring - Dath Mita (USDA)

USDA's Foreign Agricultural Service (FAS) will demonstrate the USDA/NASA Global Agricultural Monitoring (GLAM) web site (at http://glam1.gsfc.nasa.gov), whereby 250-meter resolution MODIS (Moderate-resolution Imaging Spectroradiometer) time series imagery is operationally used to estimate relative crop yields worldwide. In addition, operational processing of Landsat-7 and Landsat-8 imagery for estimating national crop area and crop type at 30-meter resolution will be described and demonstrated.

5:15 PM - 5:30 PM
Wrap-up

Thursday, June 23, 2016 - Real Time Oceans/Fresh Water Remote Sensing

9:00 AM - 9:10 AM
Welcome and Logistics - Jasmine Nahorniak (OSU)

9:10 AM - 9:40 AM
Possibility of Day-Night-Band of VIIRS to Detect Fishing Activities - Ichio Asanuma (TUIS)

9:40 AM - 10:30 AM
WORKSHOP: Suomi-NPP VIIRS Nighttime Environmental Products for Land Science and Disaster Response Applications - Miguel Roman (NASA)

A new generation of satellite instruments, pioneered by the Visible Infrared Imaging Radiometer Suite (VIIRS) Day/Night Band (DNB), now offer global measurements of nocturnal visible and near-infrared light that are suitable for Earth science and climate studies. These novel low-light measurements open doors to a wealth of new and expanded interdisciplinary research topics, ranging from urban sustainability, improved weather forecasting, and enhanced climate data records. This talk will cover the following core applications areas: (1) Fundamental questions and challenges surrounding quantitative nighttime remote sensing; (2) Novel capabilities, applications, and algorithms involving VIIRS DNB measurements of interest to the research and operational communities; and (3) Temporal studies of night light for change detection.

10:30 AM - 11:15 AM
Posters/Exhibits

11:15 AM - 11:45 AM
Sentinel-3 Mission Overview - Susanne Mecklenburg (ESA)

11:45 AM - 1:00 PM
Lunch

1:00 PM - 2:00 PM
WORKSHOP: SeaDAS 7 for Ocean Data Users - Fred Patt (NASA)

SeaDAS is a comprehensive image analysis package for the processing, display, analysis, and quality control of ocean color data. While originally developed to support the SeaWiFS mission, it now supports most US and international ocean color missions. The primary focus of SeaDAS is ocean color data, but it is applicable to many satellite-based earth science data analyses. SeaDAS 7 represents the most significant overhaul of SeaDAS in decades. This workshop will

[describe the features and functionalities of SeaDAS](#).

2:00 PM - 3:00 PM
WORKSHOP: Fisheries - Cara Wilson (NOAA)
[As a field "fisheries" encompasess not just commercially important fish stocks, but all living marine resources (LRMs), including threatened and endangered species of fish, as well as marine mammals and invertebrates. There are three distinct aspects of fisheries: harvesting, assessment and conservation. In this workshop I will cover all three aspects of fisheries, and discuss how near-real time satellite data are used in these applications](#).

3:00 PM - 3:30 PM
Posters/Exhibits

3:30 PM - 4:00 PM
VIIRS Ocean Color Products from Global Open Oceans and Coastal/Inland Turbid Waters - Menghua Wang (NOAA)

4:00 PM - 5:00 PM
WORKSHOP: Monitoring for Ecosystem and Human Health - Erin Urquhart (EPA)
[This workshop will focus on creating an interoperable network for applied and operational use of direct readout technology in coastal and inland waters. Topics will include potential for mobile application dissemination, oil spill monitoring, inland and coastal HABs, exposure risk applications for municipal drinking and recreational systems, and citizen science. The objective will be identifying existing resources, gaps, and next steps toward building networks for water quality](#).

5:00 PM - 5:15 PM
Wrap-up

Friday, June 24, 2016 - Real-time Atmosphere Science Applications

9:00 AM - 9:10 AM
Atmosphere Discipline Welcome/Overview for the Day – Allen Huang (UW)/Anders Soerensen (EUMETSAT)

9:10 AM - 9:40 AM
Status and Future Atmosphere Near Real-Time Applications - Allen Huang (UW)/Anders Soerensen (EUMETSAT)/Carlos Cabanas (EUMETSAT)

9:40 AM - 10:10 AM
Atmospheric Composition - Christian Retscher (EUMETSAT)

10:10 AM - 10:30 AM
EUMETSAT EARS Network – Overview and the New VIIRS Day Night Band Service - Anders Soerensen (EUMETSAT)

10:30 AM - 10:50 AM
EUMETSAT EARS Network – the New FY-3-based Service - Carlos Cabanas (EUMETSAT)

10:50 AM - 11:30 AM
Posters/Exhibits

11:30 AM - 12:30 PM
WORKSHOP: Nowcasting - PPS Algorithms and Products - Adam Dybbroe (SMHI)

The EUMETSAT Polar Platform System (PPS) is a software package developed in the frame of the Satellite Application Facility for Nowcasting and Very Short Range Forecasting (NWCSAF) providing algorithms and infrastructure for generating cloud and precipitation products from VIIRS and AVHRR data. PPS takes as input VIIRS SDR data as e.g. provided by CSPP and AVHRR data as provided by AAPP. The PPS outputs cloud mask, cloud type, cloud top temperature and height (CTTH), precipitation (using AVHRR and AMSU/MHS - only on NOAA/Metop platforms), and cloud microphysical properties. The cloud microphysical properties are the Cloud phase and Liquid water path (official validated products) as well as the auxiliary parameters Ice water path, Effective radius and Optical thickness. In this session we will briefly describe the science behind the PPS algorithms. You will become familiar with the PPS products and how to interpret them and we will give examples how they can be used in Nowcasting. We will also demonstrate how PPS can be run in a real-time environment.

12:30 PM - 1:45 PM
Lunch

1:45 PM - 2:45 PM
WORKSHOP: Direct Broadcast Data in NWP - William Bell (UK Met Office)
In this session we will cover the use of direct broadcast data in regional and global NWP focussing initially, as an example, on the use of such data in the Met Office assimilation systems. The Met Office currently use direct broadcast radiance data from MHS, ATMS, IASI, CrIS and AIRS in their regional NWP system, and both global and locally received data in their global NWP system. The session will summarise the benefits of various data types for global and regional NWP, and show how the timeliness constraints imposed by regional NWP drive the need for direct broadcast data. Finally we will consider some of the challenges in using satellite data in regional NWP.

2:45 PM - 3:15 PM
Transition from EOS to SNPP (IMAPP and Next Steps) - Allen Huang (UW)

3:15 PM - 4:00 PM
WORKSHOP: IMAPP Training Workshop – From Theory to Applications - Kathy Strabala (UW)
IMAPP direct broadcast training workshops strive to promote the use of Aqua and Terra direct broadcast data for the enhancement of environmental forecasting and decision making. The courses focus on the use of locally acquired data and products from organizations who manage X -Band antennas around the world. The 3-5 day courses include morning overviews of the Aqua and Terra satellite instruments and products, allowing the students to become familiar with the data and theory behind the standard land, ocean and atmosphere science products available through IMAPP, and the strengths and weaknesses of each one. Each afternoon consists of lab exercises where students explore local data sets and applications described in the morning sessions. The final day of the workshop consists of student presentations describing a local investigation on a topic of their choice. In summary, these are hands-on, practical courses focused on teaching the student environmental decision making skills based on remote sensing data. To date, 12 workshops have been taught on 6 continents including students from more than 60 countries, working in coordination with IGARSS, GEOSS, and the WMO.

4:00 PM - 4:15 PM
Break

4:15 PM - 5:30 PM
WORKSHOP: Community Software Tools - Martin Raspaud (SMHI)/David Hoese (UW)
The Pytroll project comprises almost 20 free and open source python modules to read, analyse, process and write weather satellite data. Users and developers from all around the world are contributing to make Pytroll the go-to python framework for weather satellite imager data. In this session, we will first present the different Pytroll modules, covering data reading, combining, remapping, and decorating among other things. Then we will give real-world examples (read actual python code examples) on how to perform different weather satellite related tasks, using polar orbiting imager data to work on. Finally, we will present how to batch-process data, and will demonstrate how pytroll is used for stable 24/7 operations at the Swedish Meteorological and Hydrological Institute, using message queues for low-latency real-time processing of weather satellite data. Polar2Grid is an all-in-one precompiled software package that makes it easy to create high quality images from satellite data files with a simple command line interface. Development of Polar2Grid started over 4 years ago to help direct broadcast users with a script for converting VIIRS SDRs in to AWIPS compatible NetCDF files. Since then, Polar2Grid has grown into an entire python package supporting more than 7 satellite data formats including Terra and Aqua MODIS HDF4 and more than 4 output data formats while still being usable from a single command line call. Creating 24 bit atmospherically corrected true color imagery involves executing a simple bash shell script and pointing it to the input data files. Recently, the Polar2Grid project has started contributing to and using the open source software created by the PyTroll group. This collaboration will give software developers easy access to all of the features of Polar2Grid in an easy to use set of python libraries while Polar2Grid will still provide the simplified command line interface that users are used to.

5:30 PM - 5:45 PM
Wrap-up

5:45 PM - 6:00 PM
Adjourn - Patrick Coronado/Jose-Luis Casanova